TECHNICAL MANUAL

OPERATION AND MAINTENANCE INSTRUCTIONS

STORAGE TANK, LIQUID OXYGEN
TYPE TMU-7A/E
2,000 GALLON CAPACITY
PART NO. C70013
NSN 3655-01-245-8408YD

HYDRA-RIG CRYOGENICS, INC.
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FOREWORD

Purpose. This technical manual will provide the using activity with operation and service instructions for the Liquid Oxygen Storage and Transfer Tank, Type TMU-7A/E.

Scope. This manual will provide the using activity with applicable information required on the handling, storage, and hazards associated with the use of cryogenic equipment and products. Any corrections regarding this technical manual should be submitted in accordance with TO 00-5-1.

Throughout this manual the unit will primarily be called the Tank. It may also be called the Storage Tank. Tanks referenced but not covered by this manual will contain additional descriptions. Example: supply tank and receiving tank. Liquid oxygen may be referred to as the product, or abbreviated as LOX in parts of this manual.

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1-2.3 Leading Particulars. A summary of leading particulars for the Tank appears in Table 1-1.

1-2.4 Related Publications. The publications listed in Table 1-2 are required and shall be used with this publication, the Repair and Overhaul Instructions, T.O.37C2-8-24-3, and the Illustrated Parts Breakdown, T.O.37C2-8-24-4 in the operation, maintenance, service, and repair of the Tank.

1-2.5 Safety Precautions. Safety precautions related to liquid oxygen and this Tank are listed in the Safety Summary. Safety precautions which are related to specific procedures will appear in the text.

1-2.6 Properties of Liquid Oxygen (LOX). LOX is a pale blue, nonviscous, water-like fluid. At atmospheric pressure it is 1.14 times heavier than water and weighs 9.527 pounds per gallon. LOX boils at -297° F. When LOX is converted to a gaseous state it expands to about 860 times its origional volume. One cubic foot of LOX (7.5 gallons) will expand to about 860 cubic feet of gaseous oxygen at 70° F. For additional information about LOX refer to T.O.42B6-1-1.

1-2.7 Tank Management. This Tank is classified as FSC 3655 registered Air Force Ground Support Equipment. It is to be managed under provisions of AFR 66-1. Using activities will record the USAF registration number located on the

Table 1-2. Related Publications.

Publication No.	Title
T.O.00-5-1	AF Technical Order System
T.O.00-25-107	AFLC Area Support
T.O.00-25-172	Ground Servicing of Aircraft and Static Grounding/Bonding
T.O.00-25-223	Integrated Pressure Systems and Components
T.O.00-25-224	Welding High Pressure and Cryogenic Systems
T.O.00-25-229	Valves and Regulators
T.O.33D2-10-60-1	Cryogenic Sampler
T.O.34Y5-3-37-1	Operation and Maintenance Instructions Power Driven Rotary Vacuum Pump
T.O.00-35D-54	USAF Material Deficiency Reporting and Investigating System
T.O.35-1-3	Painting and Marking of USAF Aerospace Ground Equipment
T.O.37C2-8-29-3	Liquid Oxygen Storage Tank, Overhaul and Repair Instructions
T.O.37C2-8-29-4	Liquid Oxygen Storage Tank, Illustrated Parts Breakdown
T.O.37C2-8-1-116WC-1	Inspection Work Cards
T.O.37C2-8-27-11	Operation, Maintenance and Overhaul Instructions with Illustrated Parts Breakdown Meter, Dual Efficiency
T.O.37C11-3-1	Vacuum Gage (Portable), Part No. 15840
T.O.36G2-3-1	Air Purging Unit, Type GSU-62/M
T.O.37C11-1-1	Cleaning of Pressure Gages Used
T.O.42B6-1-1	Quality Control of Oxygen
AFOSH-STD-127-66	Occupational Safety General Industrial Operations
AFR-144-1	Fuels Management
MIL-STD-1359A	Cleaning Methods and Procedures for Breathing Oxygen Equipment

Tank's data plate. The USAF registration number consists of a 13 digit, alphanumerical arrangement which indicates: (1) The Federal Supply Class, (2) Calendar year in which the Tank was built, (3) Federal Item Identification Number (FIIN) and (4) Assigned Serial Number. When the serial number consists of fewer than four digits, zeros will be added in front of the serial number. Example: Hydra Rig Cryogenics manufactured Tanks, Type TMU-7A/E, NSN 3655-01-087-000lYD and delivered them in the year 1987 with serial numbers beginning with 001.

The Federal Identification Number assigned these Tanks is EAB for LOX tanks. The sample USAF registration number, therefore, would be 3655-01-EAB-0001. Compliance with the afore stated instructions shall be reported in accordance with AFR 66-1 and TO 00-25-215.

1-3 CONSUMMABLE MATERIALS LIST.

1-3.1 Materials used in the maintenance of the Tank at the operating level are listed in Table 1-3.

Table 1-3. Consumable Materials List.

Material	Specification	Federal Stock No.
Tape, Antiseize (1/2-inch)	MIL-T-27730A	8030-00-889-3535
Nitrogen	BB-N-411	6830-00-285-4769
Leak Detection Compound, Oxygen Systems, Type 1	MIL-L-25567C	6850-00-621-1820
Solvent, trichlorotrifluoroethane	MIL-C-81302	